Experimental evidence on the productivity effects of generative artificial intelligence

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Abstract

We examined the productivity effects of a generative artificial intelligence (AI) technology, the assistive chatbot ChatGPT, in the context of midlevel professional writing tasks. In a preregistered online experiment, we assigned occupation-specific, incentivized writing tasks to 453 college-educated professionals and randomly exposed half of them to ChatGPT. Our results show that ChatGPT substantially raised productivity: The average time taken decreased by 40% and output quality rose by 18%. Inequality between workers decreased, and concern and excitement about AI temporarily rose. Workers exposed to ChatGPT during the experiment were 2 times as likely to report using it in their real job 2 weeks after the experiment and 1.6 times as likely 2 months after the experiment. Description Editor’s summary Automation has historically displaced human workers in factories (e.g., automotive manufacturing) or in performing routine computational tasks. Will generative artificial intelligence (AI) tools such as ChatGPT disrupt the labor market by making educated professionals obsolete, or will these tools complement their skills and enhance productivity? Noy and Zhang examined this issue in an experiment that recruited college-educated professionals to complete incentivized writing tasks. Participants assigned to use ChatGPT were more productive, efficient, and enjoyed the tasks more. Participants with weaker skills benefited the most from ChatGPT, which carries policy implications for efforts to reduce productivity inequality through AI. —EEU The assistive chatbot ChatGPT raises productivity in professional writing tasks and reduces productivity inequality.